**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**



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| In the Matter of | ) | |
| | ) | |
| Advanced Television Systems | ) | |
| and Their Impact Upon the | ) | MM Docket No. 87-268 |
| Existing Television Broadcast | ) | |
| Service | ) | |

# COMMENTS OF
# THE NATIONAL CABLE TELEVISION ASSOCIATION, INC.



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## TABLE OF CONTENTS


INTRODUCTION AND SUMMARY ..... 1

DISCUSSION ..... 5

I. THE GOVERNMENT SHOULD NOT MANDATE A DIGITAL ADVANCED TELEVISION STANDARD ..... 5

A. Government-Mandated Standards Will Freeze Technology ..... 7

B. Government-Mandated Standards Will Reduce Competition and Consumer Choice ..... 9

C. Mandatory Standards Present Regulatory Barriers to Innovation ..... 10

II. DIGITAL TELEVISION IS DYNAMIC AND CURRENTLY AVAILABLE TO CONSUMERS WITHOUT GOVERNMENT STANDARDS ..... 11

III. STANDARDIZATION IS CONTRARY TO THE GOALS OF THE 1996 TELECOMMUNICATIONS ACT ..... 18

CONCLUSION ..... 20

ATTACHMENT A

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# COMMENTS OF THE NATIONAL CABLE TELEVISION ASSOCIATION, INC.

The National Cable Television Association, Inc. ("NCTA"), by its attorneys, hereby submits its comments in response to the Fifth Further Notice of Proposed Rulemaking on Advanced Television Systems ("Notice"). NCTA is the principal trade association of the cable television industry in the United States and represents cable television operators serving over 80 percent of the nation's cable television households. Its members also include cable programming networks, cable equipment manufacturers and others affiliated with the cable television industry.

## INTRODUCTION AND SUMMARY

NCTA believes it would be an irreversible mistake for the government to adopt a federal technology standard for digital television.

The Commission stands at a crossroads as it faces a decision whether to mandate a Digital Television ("DTV") standard or to let marketplace forces determine appropriate standards. The decision will significantly impact the future course of digital technology, not only for broadcast television, but also for other

industries across the economy using digital delivery systems. Given the well-established drawbacks of government-mandated technical standards (e.g., freezing technology and innovation, reducing competition and consumer choice),[1] NCTA has generally opposed a government-mandated technology except in the occasional case where narrowly-tailored standards would plainly serve the public interest.

The FCC has recognized the broad risk of setting a federal technology standard for DTV. The Notice acknowledged the risk. Indeed, at the outset of the ATV service proceeding in 1987, the Commission affirmed the risk. And in other evolving technical areas, such as establishment of Personal Communications Services and as recently as this month in the Number Portability proceeding, the FCC has been reluctant to freeze technical improvements by adopting a standard. In these Comments, we reiterate our general opposition to government intervention in technology standards and bid the FCC to bring its own well-founded reluctance to imposing a technical standard on DTV. Particularly in such a dynamic and rapidly changing industry, the heavy hand of government deserves no place.

Our Comments should not be read to be critical of the particular DTV standard recommended by the Advisory Committee on Advanced Television Service ("Advisory Committee"). It is whether any standard should be dictated by government -- not the standard itself -- to which our concerns are directed.

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[1] Attached to this pleading is the Declaration of Dr. Bruce M. Owen which reviews the academic literature counseling against government-mandated technical standards.

The very history of advanced television teaches us one powerful lesson: a government-mandated standard, though appealing in a short-term way, is the wrong way to go. One need not look back more than a decade ago, when the momentum of the moment directed the FCC to establish an analog HDTV standard. Those in favor of government standard-setting would have declared victory with that standard. Today, we recognize that "standard" for the defeat it would have been. Had the standard been set then, the nation would have been saddled with an inferior technology.

Worse, that standard would have been locked into the Code of Federal Regulations, alterable only by protracted government rulemaking. And any amendments would be slowed down even further by incumbents with a vested interest in the status quo standard. As the length of the Advisory Committee process demonstrates, arriving at a standard, let alone changing an established standard, is agonizingly slow work, far slower than the pace of innovation and change in DTV.

Now we are offered a new DTV standard in place of the analog HDTV model. Again, the standard-setting community would declare "victory" by having the FCC mandate a standard today, to be enforced, somehow, against the tides of technological change and the ingenuity of science.

The temptation of policy makers to do so is, admittedly, considerable. Finishing what one starts is the ordinary outcome of any process, particularly one as complex and wide-ranging as this one. NCTA also recognizes the substantial

investment of sweat and capital equity by companies, including those in the cable industry, not to mention the voluntary efforts of others who have worked on this standard. But acknowledgment of hard work is not the issue. Making the wise public policy decision about a technical standard is.

Advocates for standard-setting insist that the DTV process should be -- must be -- rewarded by government adoption. And it should occur even when adopting a standard today runs counter to all we have learned in the advanced television proceeding -- and all that well-established economic theory tells us about the costs of government standards. Such an approach is short-sighted and contrary to the public interest.

It is hard to step back from a process that has been so inclusive and so demanding of so many over so many years. But even the most energetic explorers must pause in the road and ask, given all that has been learned along the way, are we still on the right track? When that track is adoption of a government-mandated standard, the answer is no. If the goal is technological excellence and superiority of signal, then allowing market forces to continue to evolve what has been for 10 years an evolving standard is the wisest course.

A thriving and dynamic digital marketplace is already developing without government standards. Direct broadcast satellite's digital services are in over 2 million homes. Cable television is preparing to launch digital services before the end of this year. Industries as disparate as PCS and cellular, DBS and MMDS, as well as the computer, motion picture, and recording industries, have entered the

digital era, without the need for a government agency to enforce a technical standard.

While a government-imposed, well-defined standard may guarantee certainty, it will freeze technology in a rapidly changing industry and unnecessarily define commercial development of the technology. Moreover, when the marketplace settles down, standards, if necessary, will be set voluntarily without government intervention. The recommendation reached by the Advisory Committee itself demonstrates that an industry-wide voluntary consensus may develop, while permitting innovation and consumer choice to coexist.

In sum, NCTA believes that the government should not set the limits of technological development by edict. Even where advised by industry representatives, the government should not substitute its judgment for that of the marketplace. It would be a grave mistake to define a standard based on today's view of the optimal standard. We urge the Commission, therefore, not to cast the die in a manner that forecloses the further evolution of digital technology.

## DISCUSSION

### I. THE GOVERNMENT SHOULD NOT MANDATE A DIGITAL ADVANCED TELEVISION STANDARD

As the Notice points out, the Commission recognized early on that government-dictated standards may be counterproductive.[2] At that time, there were a variety of high definition transmission schemes, both compatible and

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[2] Notice of Inquiry, MM Docket No. 87-268, 2 FCC Rcd 5125 (1987) ("First Inquiry").

incompatible with NTSC, and a resurgence in private research and development activities. But no one knew that an all-digital HDTV standard was even feasible in 1987. As the technology evolved, the analog systems were eliminated, and the remaining digital systems were consolidated into the Grand Alliance's consensus standard.

If the government had set in concrete a particular standard for ATV when this proceeding began -- or anywhere along the way -- the public would not have gained the benefits we all now expect from a digital ATV system.

The Commission was concerned then, as now, about selecting a standard that would sacrifice future improvements or worse yet, result in the selection of the wrong standard. A year later, in assessing the advantages and disadvantages of standards, it recognized that "detailed, inflexible standards that have the force of law may reduce consumer choice and prevent the timely introduction of new technology."[3] Although it later determined that a FCC-endorsed standard might be appropriate, the Commission now acknowledges that recent developments warrant a renewed analysis of its standards-setting role.[4]

The Commission believes that the government should impose a technical standard only when two conditions are met: there is a substantial public benefit from a standard and private industry either will not, or cannot, produce a standard.

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[3] Tentative Decision and Further Notice of Inquiry, MM Docket No. 87-268, 3 FCC Rcd 6520, 6534 (1988) ("Second Inquiry").

[4] Notice at ¶27.

In this case, the Commission recognized that the second condition has not been met for broadcast television since the work of the Advisory Committee demonstrates that private industry can arrive at a standard. As for the first condition, whether DTV standards offer a substantial public benefit will require a careful balancing of the perceived benefits of standards with their huge potential costs. We believe that in a rapidly changing digital environment, the balance clearly weighs in favor of market-driven, not government-mandated, technology policy.[5]

### A. Government-Mandated Standards Will Freeze Technology

As a general matter, government-mandated standards freeze technology and chill innovation. The Commission recognizes that digital technology is in its infancy and that the "novelty and fluidity" of the technology practically assures further breakthroughs. Federal standards will only hamper innovation and competition by fixing the technology in time.[6]

Dr. Bruce Owen, an economist and recognized expert on telecommunications and government standards, summarized the pitfalls associated with government intervention in emerging technologies:

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[5] See e.g., Testimony of Craig Mundie, Senior Vice President, Consumer Platforms Division, Microsoft Corporation, before the Senate Committee on Commerce, Science and Transportation on the Electromagnetic Spectrum Management Policy Reform and Privatization Act, June 20, 1996 ("Mundie Testimony"); Comments of Microsoft Corporation in MM Docket No. 87-268, December 12, 1995 at 2 ("we believe minimal government intrusion is warranted and that the Commission, as it has done in other instances, should permit the marketplace to make choices rather than government.")

[6] See Notice at ¶21.

> There are inherent risks in mandating a standard. First, because it cannot know the future development of technology, costs, and demand, the government may simply mandate the wrong standard, one that is inferior not only to the optimal standard, but also inferior to whatever non-optimal voluntary standard would develop. Second, a government-enforced standard will reduce the incentive to develop a superior alternative. If a superior alternative is developed, a government-mandated standard will surely impede its adoption.[7]

At a minimum, there is the risk of establishing a premature standard based on unproven technology. This is particularly so in a rapidly-changing environment with little or no field experience or basis for comparison.[8] In the view of one industry participant, General Instrument's former CEO Daniel Akerson, the "lesson of the personal computer success story is that the government should not prescribe technological standards in dynamic industries" because:

> Such standards freeze the current level of technology in place and they stifle the development of new technologies. When the government lets the marketplace operate, innovators innovate, competition flourishes and consumers' choices increase. And, finally, equipment prices plummet. When the time is right, the technology will mature, the market will set standards and insist on interoperability, the need for competitive pricing and the availability of compatible equipment.[9]

Although the Commission finds that the headroom for innovation incorporated in the Advisory Committee's DTV standard, along with the desirability

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[7] See attached Declaration of Bruce M. Owen in Response to the Fifth Further Notice of Proposed Rulemaking ("Owen Declaration") at 9 (footnote omitted).

[8] Notice at ¶28. In the direct broadcast satellite proceeding, the Commission noted that the "benefits of allowing experimentation and innovation may be particularly great at the introduction of a new technology, when technical change occurs most rapidly." Direct Broadcast Satellite Services, 86 FCC 2d 719, 748 (1981).

[9] Speech by Daniel F. Akerson, Chairman and Chief Executive Office, General Instrument Corporation, Washington Metropolitan Cable Club, April 11, 1995.

of providing certainty, argue in favor of mandatory standards, it, too, recognizes that there is a major trade-off:

> [O]ver time, the likelihood increases that there will be technological innovation that even the flexible ATSC DTV Standard may not be able to accommodate. In addition, given the pace of technological change, it is likely that there will be unforseeable innovations that are incompatible with the ATSC DTV Standard. As long as there is a requirement in our rules that DTV licensees use only the ATSC DTV Standard, such innovations could not be introduced to consumers without a potentially costly and time-consuming Commission proceeding. That, in turn, could reduce the incentive to conduct the research and development that leads to innovation. [10]

It simply is not in the public interest to adopt rules freezing the current state of technology, particularly given the experience to date evidencing the revolutionary growth rate in digital technology.

### B. Government-Mandated Standards Will Reduce Competition and Consumer Choice

In addition to freezing technology, mandatory standards mean a loss of variety and consumer choice and technological competition. This is because equipment manufacturers cannot offer differentiated products using different technologies.[11] Companies will be reluctant to invest in research and development because of impediments to market acceptance of a technology that departs from the government standard. Vendors will be reluctant to build new and improved products if the product deviates from the standard or risks being non-compliant. In

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[10] Notice at ¶42.

[11] Owen Declaration at 7.

short, government-imposed standards create barriers to entry by new technologies.[12]

### C. Mandatory Standards Present Regulatory Barriers to Innovation

Regulatory processes also will impede modifications of the standard or the introduction of new technologies. Indeed, any technological improvement that requires a change in the standard "not only has to overcome any economic 'inertia' that exists in the marketplace, but also has to overcome a regulatory burden and associated political inertia. This additional burden may deter useful innovation."[13]

Moreover, the government holds the cards when there is a standard. And incumbents who benefit from the codified standard will fight to keep the standard with regulatory muscle that would not be available in the marketplace. As explained by Craig Mundie, on behalf of the Computer Industry Coalition on Advanced Television Service ("CICATS"):

> Making the standard a law will lock in today's view of technological capability for a very long time. Any modifications or improvements will have to run the gauntlet of a long and arduous government approval process, something with which even the members of ATSC are already too familiar. . . . And if proponents of [the ATSC DTV

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[12] Id. at 7. Microsoft and Compaq explained in recent Congressional testimony that the adoption of a single standard spells problems for new industries that are seeking compatibility and integration with television technology. See Mundie Testimony at 6-7; Testimony of Robert Stearns, Senior vice President, Technology and Corporate Development, Compaq Corporation before Senate Committee on Commerce, Science and Transportation on the Electromagnetic Spectrum Management Policy Reform and Privatization Act, June 20, 1996 at 5 ("Stearns Testimony").

[13] Owen Declaration at 4.

> system] believe it will best serve the public's needs and tastes, they should be free to produce and market products meeting the standard.[14]

Indeed, the computer industry is proof that innovation, efficiency and productivity can be achieved if standards are set voluntarily in response to the market demands. In the DTV context, as Professor Owen concludes:

> If the ACATS is correct, and there is not a superior alternative, the market should be willing to adopt the ATSC DTV Standard without the standard being mandated by the Commission. Having achieved this consensus, there is no need for the government to mandate the standard. If the standard has as much merit as is supposed, it will surely be adopted voluntarily; there is no serious competing standard and therefore little risk to early adopters. It is very difficult to point to any market failure that would prevent adoption of a meritorious standard in this circumstance.[15]

## II. DIGITAL TELEVISION IS DYNAMIC AND CURRENTLY AVAILABLE TO CONSUMERS WITHOUT GOVERNMENT STANDARDS

As noted above, the history of this proceeding demonstrates that technology has made tremendous strides in the last eight years: from analog MUSE HDTV to ATV to SDTV and now to DTV. The dynamic nature of digital technologies today is evidence that the market is evolving quite nicely without government intervention. DBS's digital format is deployed in 2.2 million homes and is expected to continue its spiraling upward growth.[16] DirecTV has already announced upgrades in the

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[14] Mundie Testimony at 3. See also Stearns Testimony at 2.

[15] Owen Declaration at ¶28 (emphasis in original).

[16] "Into the Future", Cable World, June 17, 1996 (Paul Kagan Associates, Inc. estimates that DBS will reach 14.1 million households by the year 2005.)

technology for its next generation of equipment.[17] Cable television has invested millions in deploying innovative digital set top equipment to speed the introduction of digital compression techniques and other related advancements to its subscribers.[18]

Wireless carriers are announcing adoption of digital transmission capabilities which will expand their offerings exponentially. The motion picture community has had in place a dynamic digital production standard for years, without the need for codification in the federal rules. And telephone companies assert they will compete with traditional cable operators through digital innovations such as Asymmetric Digital Subscriber Line ("ADSL"), hybrid fiber coax and switched digital video. Not a day seems to go by without the announcement of new applications of digital technology or improvements on existing digital technologies.[19] And all of this innovation takes place without standards set by government.

A government standard risks imposing a "one size fits all" solution. With digital video in such a state of flux, why should broadcast digital technology drive the digital revolution? While the standard may work on cable and other media, there is no reason to believe that its parameters represent the optimal DTV system

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[17] "MPEG-2 For DirecTV," Newsbytes News Network, November 10, 1995, available in LEXIS NEXIS Library, File Current News.

[18] See e.g., Comments of Tele-Communications, Inc., MM Docket No. 87-268, November 20, 1995.

[19] Even on the date of this filing, a new chapter in digital transmission was announced. "Wireless Cable Gets FCC Approval for Digital Conversion," Communications Daily, July 11, 1996, at 3.

for the public, the vast majority of whom receive video by means other than over-the-air.[20] Other media may, for example, require different modulation and encoding techniques to improve technical efficiency and reduce cost.

A government-mandated standard would have two effects on other technologies. First, by becoming a government "rule," the standard generates momentum for extending itself into other technologies, like cable, that have no need for a standard. That is because incumbents tied to the standard will want to extend it elsewhere. There is the likelihood that it will extend to other video providers and the computer/software industries -- even though over-the-air broadcasting is the primary source of television for just 30% of homes. Second, even if government does not apply the standard elsewhere, the existence of a standard freezes improvements in other technologies as duplication of the standard becomes the easiest, though not necessarily the best, form of interoperability.

The academic literature recognizes that government mandating of standards in technologically dynamic industries is fraught with peril. Drs. Stanley M. Besen and Leland L. Johnson have concluded that the government should refrain from attempting to mandate or evaluate standards when the technologies themselves are

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[20] Owen Declaration at 12. As the Notice observes, the NTSC standard was adopted in television's infancy when a uniform national standard was arguably necessary to develop a national broadcasting system. Today, nearly 70 percent of Americans receive their television programming not from over-the-air broadcasting but from a variety of alternative video delivery systems.

subject to rapid change. It is only after the technologies have "settled down" that government action is most likely to be fruitful, as illustrated in the TV stereo case.[21]

And, as Professor Owen states in the attached Declaration:

> Many commentators have argued that the FCC made a poor choice for color television in the 1950's, and the European Community is making a losing choice in HDTV today. The Japanese HDTV system is now widely regarded as inferior to the digital system being proposed in the United States. It is hard to think of a single standard in the electronics industry that has remained frozen in place as long as the Commission's current NTSC standard for broadcast television. The ATSC DTV standard that looks so appealing and universally approved today may be regarded as a tragic error next month or next year. In short, we are far from having a crystal ball to show us the mandatory standard that is preferable to a market outcome.[22]

The Commission has not been reticent in acknowledging that government-mandated standards can be a "cure" more harmful than the disease.[23] With respect to DBS,[24] advanced cellular,[25] and broadband PCS,[26] the Commission eschewed adoption of government-imposed standards in favor of voluntary, industry-initiated standards in areas involving new and dynamic technology. As Chairman Hundt recently observed in the PCS context:

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[21] Stanley M. Besen and Leland L. Johnson, "Compatibility Standards, Competition, and Innovation in the Broadcasting Industry," Rand Corporation, November 1986, at 135 ("Rand Compatibility Study").

[22] Owen Declaration at ¶23 (emphasis added).

[23] See Notice at ¶36.

[24] DBS Proceeding, 104 FCC 2d 1317, ¶¶4, 12.

[25] Advanced Cellular Proceeding, 3 FCC Rcd 7033, 7034 (1988).

[26] PCS Second Report and Order, 8 FCC Rcd 7700, 7755-56 (1993).

> We did not have a government-mandated standard. As a result, CDMA [code-division multiple-access] and GSM all compete against each other in trying to lure the different PCS and cellular licensees into marriages with those technologies....This kind of competition of standards is going to lead to the greatest exploration of the potential of all of these different technologies.[27]

And just last week the Commission released its First Report and Order in the Telephone Number Portability proceeding.[28] In that docket, the Commission rejected requests that it choose a particular technology or specific architecture to achieve number portability. It did so in part because "dictating implementation of a particular method could foreclose the ability of carriers to improve on those methods already being deployed or to implement hybrid (but compatible) methods."[29]

This rationale echoes the Commission's decision to adopt a flexible regulatory approach to PCS technical standards. It there concluded:

> [M]ost parties recognize that PCS is at a nascent stage in its development and that imposition of a rigid technical framework at this time may stifle the introduction of important new technology. We agree, and find that the flexible approach toward PCS standards that we are adopting is the most appropriate approach.[30]

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[27] Telecommunications Reports, July 1, 1996 at 41-42 (reporting on Chairman Hundt's remarks to International Microwave Symposium, San Francisco, CA). According to published reports, Chairman Hundt noted that if the U.S. had adopted a strategy of picking one standard over another, it could easily have made the wrong choice. The FCC "almost certainly" would have been "inclined against CDMA because when we had to make the decision, that was the more experimental of the technologies," he said. "Because we allowed flexibility, because we relied on the market...industries will work together to develop de facto standards." He noted that CDMA technology now is gaining a foothold in Japan. "If the Europeans are left out in the cold, well, that's what they get for trying to have a continental selection mechanism." Id.

[28] First Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 95-116, RM 8535, FCC 96-288, released July 2, 1996.

[29] Id. at ¶46.

[30] PCS Second Report and Order, 8 FCC Rcd 7700 at ¶137.

These same concerns about stifling innovation apply to the current debate about adoption of a governmentally-mandated DTV standard. Particularly given the history of technological and architectural advances during the course of this proceeding alone, it would not be sound public policy to impose a standard on this dynamic industry.

In the Notice the Commission attempts to distinguish its decisions in PCS, DBS and other areas from the pending proceeding by asserting that those decisions were made in a context different from that of terrestrial broadcast television. It argues that free over-the-air broadcast television is a mass market media which the American people rely on for both information and entertainment. In this context, the Commission asserts, the goals of certainty and reliability take on a different significance that "may strengthen the case for our adoption of a DTV standard."[31]

But the Commission's attempt to rationalize its proposal is unavailing. In fact, it is because broadcast television is an "established industry" that a market-based approach will achieve all of its benefits without the costs usually associated with such standards. This is so because all sectors of the broadcast industry, as well as associated equipment makers and others who are dependent on the broadcast industry, will have significant incentives to reach consensus on transmission and reception standards to better serve the audience of the $29 billion-a-year broadcast industry.

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[31] Notice at 36.

Moreover, as Dr. Owen points out, the notion that over-the-air viewers are potentially harmed by a hands-off government policy is not borne out by marketplace dynamics. The transition to digital is not going to happen overnight. Indeed, early adopters of DTV receiving equipment are likely to be high-end equipment consumers rather than the broad television viewing public.[32] The public investment in receivers will be protected because the transition will be gradual and millions of NTSC receivers will continue to be in the market. Thus, any battle between digital technologies will not frustrate analog-only viewers who will remain the bulk of broadcasting's audience for much time to come.

In 1950 the FCC, to its eventual dismay, dealt with the question of adopting standards for the mass market, "free" broadcast industry when it adopted an initial standard for color television. As Drs. Besen and Johnson concluded:

> [The color TV experience] suggests that dangers of premature standard setting are especially great if significant refinements are taking place at the same time that the relative merits of the various alternative technologies are being considered. The FCC was probably aware of this danger of premature action, but it was under pressure to make a decision: If selection of an incompatible system was inevitable, the sooner the decision was made the smaller would be the installed base of incompatible black and white receivers. The outcome was, nonetheless, a mistake.[33]

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[32] See Owen Declaration at 12 (if the consensus standard has merit, it will be adopted voluntarily. With no competing standard, there is little risk to early adopters).

[33] Rand Compatibility Study at 94.

The Commission has served as a "rallying point" for coordination on advanced television but wishes to "minimize regulation," "encourage innovation" and "promote competition" in digital television.[34] These goals will be best served without mandated digital standards. In absence of federally-mandated standards, voluntary de facto standards are likely to develop in the marketplace as they already have with existing digital video providers. But we should not risk petrifying a standard that can only be changed through arduous and exhaustive administrative proceedings. Industry through market forces is better able to develop optimal standards, particularly interoperability and interfaces. The Commission should therefore stay its hand and let the marketplace establish de facto standards, if appropriate, when digital technology is mature.

## III. STANDARDIZATION IS CONTRARY TO THE GOALS OF THE 1996 TELECOMMUNICATIONS ACT

In an era when Congress and the Executive Branch are committed to the benefits of deregulation, a proposal to impose a government-mandated standard on a rapidly-changing technology must provoke serious questions. The Commission itself is in the midst of implementing the provisions of the Telecommunications Act of 1996,[35] whose goal is to "provide for a pro-competitive de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all

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[34] Notice at ¶¶2, 29, 30.

[35] Pub. L. No. 104-104, 110 Stat. 56 (1996).

Americans...."[36] As Chairman Hundt asked in this proceeding: "How is it consistent with the deregulatory spirit of the new Telecommunications Act to codify (directly or indirectly) the 200-plus pages of technical details that constitute the ATSC standard?"[37]

The short answer is that it isn't. Indeed, the thrust of the 1996 Act is to avoid government regulation and rely upon the marketplace wherever possible. Just as the Commission must implement the specific deregulatory mandates of the 1996 Act, so too should it follow the spirit of the Act in rejecting proposals to adopt rigid, binding technical DTV standards in an area of constantly-changing technological development.

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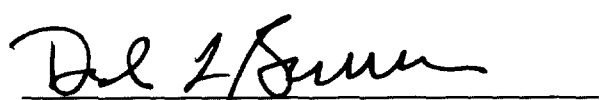
[36] Conference Report, Telecommunications Act of 1996, Report 104-458, 104th Cong. 2d Sess. at 1 (emphasis added).

[37] Separate Statement of Chairman Reed E. Hundt, Fifth Further Notice of Proposed Rulemaking, MM Docket No. 87-268 at 2.

## CONCLUSION

For the reasons stated above, the Commission should reject the proposal to mandate a DTV standard and instead should leave that decision to the marketplace.

Respectfully submitted,



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July 11, 1996

# ATTACHMENT A

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

| | | |
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| In the Matter of Advanced Television Systems and Their Impact Upon Existing Television Broadcast Service | } | MM Docket No. 87-268 |

**Declaration of Bruce M. Owen in Response to the Fifth Further Notice of Proposed Rule Making**

## I. QUALIFICATIONS

1. I am an economist and president of Economists Incorporated, an economic consulting firm located at 1200 New Hampshire Ave., N.W., Washington, D.C. 20036. I am also a visiting professor of economics at Stanford University's Washington, D.C. campus. I hold a Ph.D. in economics from Stanford University (1970) and a B.A. in economics from Williams College (1965). My fields of specialization are applied microeconomics and industrial organization, especially antitrust economics and regulation of industry. I have published a number of books and articles in these fields, including "*United States v. AT&T*: The Economic Issues" (with Roger Noll, in Kwoka and White, eds., *The Antitrust Revolution*, 2nd ed., 1994), *Video Economics* (with Steven Wildman, 1992), and *The Regulation Game* (with Ronald Braeutigam, 1978). I have taught economics as a full-time member of the faculties of Duke University and Stanford University. From 1979 to 1981 I was the chief economist of the Antitrust Division of the United States Department of Justice. During 1971-1972 I was the chief economist of the White House Office of Telecommunications Policy. A copy of my curriculum vitæ is attached to this declaration.

## II. INTRODUCTION AND SUMMARY

2. I have been asked by the National Cable Television Association to provide an economic analysis of several issues raised by the Federal Communications Commission ("Commission") in its *Fifth Further Notice of Proposed Rule Making* (released May 20, 1996), including whether the Commission should require the use of the Advanced Television Systems Committee digital television standard ("ATSC DTV Standard") by digital television licensees and whether the Commission should act to ensure compatibility between digital broadcast and digital cable transmissions. This section summarizes my conclusions. Section III reviews the economics literature relating to standards setting. Section IV discusses the establishment of a mandatory standard for digital television. Section V addresses the issue of mandating interoperability of broadcast DTV with other video delivery systems. Section VI is a conclusion.

3. Standards arise and have economic value because they facilitate trade and commerce. Standards play two roles in the production of television service. First they serve as guidelines for coordinating the many activities that take place at each stage of production. Second they ensure that the output of one stage is compatible with the technologies and practices at the next stage. Precisely because of the importance and usefulness of standards, they are frequently difficult to modify or replace once established. The tendency of standards to be resistant to change means that choices among alternative standards should not be taken lightly. Once established, standards may influence economic activity for years to come.

4. The Commission noted early in this proceeding that there might be benefits to consumers if advanced television compatibility standards were adopted, either through formal Commission action or through voluntary standards organizations. The Commission also recognized that benefits could come about through improvements in technology